



Air Quality Permitting Statement of Basis

January 4, 2005

**Tier II Operating Permit and Permit to Construct
No. T2-040121**

**Merritt Brothers Lumber Co., Athol
Facility ID No. 055-00039**

Prepared by:

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AIR QUALITY DIVISION*

PROPOSED FOR PUBLIC COMMENT

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Acronyms, Units, and Chemical Nomenclatures

acfm	Actual Cubit Feet per Minute
AFS	AIRS Facility Subsystem
AIRS	Aerometric Information Retrieval System
AQCR	Air Quality Control Region
B	Natural minor
CFR	Code of Federal Regulations
CO	carbon monoxide
DEQ	Department of Environmental Quality
HAPs	hazardous air pollutants
IDAPA	a numbering designation for all administrative rules in Idaho promulgated in accordance with the Idaho Administrative Procedures Act
lb/day	pounds per day
lb/hr	pounds per hour
Mbdft	1,000 board feet
MMbdft	million board feet
MMbdft/yr	million board feet per year
MMBtu/hr	million British thermal unit per hour
MBL	Merritt Brothers Lumber Co.
MACT	Maximum Achievable Control Technology
NAAQS	National ambient air quality standard
NESHAP	Nation Emission Standards for Hazardous Air Pollutants
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
OP	operating permit
PM	particulate matter
PM ₁₀	particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers
PSD	Prevention of Significant Deterioration
PTC	permit to construct
PTE	potential to emit
<i>Rules</i>	<i>Rules for the Control of Air Pollution in Idaho</i>
SIP	State Implementation Plan
SO ₂	sulfur dioxide
T-RACT	Toxic Reasonably Achievable Control Technology
TAPs	Toxic Air Pollutants
T/yr	tons per year
µg/m ³	micrograms per cubic meter
VOC	volatile organic compound

1. PURPOSE

The purpose for this memorandum is to satisfy the requirements of IDAPA 58.01.01 Sections 201 and 404.04, *Rules for the Control of Air Pollution in Idaho (Rules)* for Tier II operating permits and Permits to Construct.

2. FACILITY DESCRIPTION

Merritt Brothers Lumber Co. (MBL) owns and operates a planer mill and finger-jointing facility. The Process Flow Diagram can be found in Section 2 of the application.

Green and dry lumber is delivered to the facility. Green lumber is dried in one of five dry kilns and dry lumber is finished in the planer mill and/or finger-jointing mill. Planing produces shavings and a small amount of dry chips. A hammer hog in the planer mill building is used to break up larger wood scraps. The planer shavings, chips, and hogged wood are transported pneumatically to planer mill cyclone No. 4, located on the truck bin. A baghouse connected in series controlled PM₁₀ emissions from cyclone No. 4. Shavings are loaded into trucks from the bottom of the shavings bin for transport offsite.

Loading planer chips and shavings into trucks from the bin is a source of fugitive particulate emissions and the area under the shavings bins is enclosed to control dust. The cyclones are point sources of particulate emissions. Particulate emissions from planer shavings cyclone (#4) are controlled by a baghouse. For purposes of permitting, the baghouse is the emissions discharge point.

Cut ends are delivered to the facility from various off-site sources for finger-jointing. Random board pieces are cut and joined to produce a saleable product. Chips and sawdust for the finger-jointing process are transported pneumatically to two cyclones on separate truck bins. The material is loaded into trucks from the bottom of the bins for transport offsite. Truck traffic into and out of the finger-jointer facility produces fugitive particulate emissions.

Loading of finger-jointer chips and sawdust into trucks also creates fugitive particulate emissions. The two finger-jointer cyclones are point sources of particulate emissions. Finished product from all the operations at the facility is packaged and shipped from the facility by truck or rail.

Exhaust from the dry kilns is routed to heat exchangers and exhausts through the five heat exchanger stacks, which are point sources. Emissions from the dry kilns include particulate matter, VOC and three air toxic compounds (formaldehyde, methanol and phenol). The dry kilns are heated using non-contact steam coils, with the steam being supplied by two natural gas boilers. The natural gas boilers are point sources of PM₁₀, NO_x, SO₂, CO and VOCs. Natural gas combustion also produces trace emissions of a number of air toxic pollutants.

3. FACILITY / AREA CLASSIFICATION

The facility is not a major facility as defined in IDAPA 58.01.01.205 or 008.10. It is not a designated facility as defined in IDAPA 58.01.01.006.27. The facility is not subject to New Source Performance Standards, in accordance with 40 CFR, Part 60; National Emission Standards for Hazardous Air Pollutants, in accordance with 40 CFR, Part 61; or National Emission Standards for Hazardous Air Pollutants for Source Categories (MACT), in accordance with 40 CFR, Part 63. The Standard Industrial Classification defining the facility is 2421. The facility classification is synthetic minor (SM) because without operational limits the facility's PTC may exceed Tier I operating permit major source thresholds.

Merritt Brothers Lumber Co. is located in Athol, Kootenai County, which is in AQCR 62 and Zone 11. Kootenai County is classified as attainment or unclassifiable for all state and federal criteria air pollutants.

The AIRS information provided in Appendix B defines the classification for each regulated air pollutant at MBL. This required information is entered into the EPA AIRS database.

4. APPLICATION SCOPE

MBL is proposing to modify its PTC No. P-040106, issued September 13, 2004. MBL proposes to add a fifth kiln to raise the total drying capacity to 170 MMbdf/yr, an increase of 40 MMbdf/yr. Non-emissions related revisions include the removal of obsolete cyclones and a target box from the permit. The cyclones and the target box are no longer connected to active process equipment.

4.1 Application Chronology

September 28, 2004	DEQ received a 15-day pre-permit construction approval application from MBL for the addition of a fifth kiln.
October 13, 2004	DEQ issued 15-day pre-permit construction application.
October 27, 2004	DEQ declared the application complete.
December 17, 2004	DEQ received revised modeling file and T-RACT analysis for formaldehyde emissions from the dry kilns and the process data on finger-jointer cyclones from Lorenzen Engineering, MBL's consultant, through email.

5. PERMIT ANALYSIS

5.1 Equipment Listing

Boilers

- Boiler No.1 is a Cleaver Brooks natural gas-fired boiler, Model L-59569, 29.3 MMBtu/hr, constructed in November 1974, and installed at the facility in February 2001.
- Boiler No.2 is a Cleaver Brooks natural gas-fired boiler, Model CB200-350, 14.65 MMBtu/hr, constructed in June 24, 1973, and installed at the facility in September 2004.

Dry Kilns

- Five dry kilns with an allowable throughput of 170 MMbdf/yr.

Cyclones and the Baghouse

- Planer mill cyclone No.4 and planer mill baghouse with flowrate of 45,000 acfm.
- Finger-jointing mill cyclone No. 5 with flowrate of 20,500 acfm.
- Finger-jointing mill cyclone No. 6 (pull through) with flowrate of 20,500 acfm.

Fugitive Emissions Sources

- Planer Process, including planer hog (indoor) with 0.60 bone-dry ton planer chips per hour, and planer screen (classifier, indoor) with 0.60 bone-dry ton planer chips per hour.
- Chip bin truck loadout with 1.50 bone-dry ton remanufacturing chips per hour.
- Shavings bin truck loadout with 4.95 bone-dry ton planer shavings per hour.

Cyclones and the Target Box Removed from the Permit

As requested in the application, the following emissions units are not included in the permit analysis and are removed from the permit because they are no longer connected to active process equipment.

- Cyclone No. 1 – Old planer cyclone with flow rate of 20,500 acfm.
- Cyclone No. 2 – Rip saw relay cyclone with flow rate of 18,250 acfm.
- Cyclone No. 3 – Rip saw cyclone with flow rate of 20,500 acfm.
- Cyclone No. 7 – Remanufacturing chips cyclone with flow rate of 18,250 acfm.
- Chip bin target box with throughput of 1.31 bone-dry ton per hour.

5.2 Emission Estimates

Emissions estimates were provided by MBL's consultant, Lorenzen Engineering, Inc. They were included in the pre-permit construction application received by DEQ on September 28, 2004. The emissions calculations submitted in the application were checked by DEQ for the bases of the emissions factors and references and found to be consistent with current DEQ methodology. Therefore, DEQ used the applicant emissions estimates as the basis for the permitting analyses of this project. Information on point source emissions estimates can be found in Appendix C of the statement of basis.

Table 5.2.1 provides a summary of the criteria air pollutants of the facility based on facility's potential to emit (PTE). Table 5.2.1 provides a summary of toxic air pollutants (TAPs) of the facility based on facility's PTE.

Table 5.2.1 SUMMARY OF EMISSIONS INVENTORY

Merritt Brothers Lumber Co. Inc., Athol										
Potential Emissions ^a – Hourly (lb/hr), and Annual (T/yr)										
Point Source Description	PM ₁₀		NO _x		CO		VOC		SO ₂	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Lumber Drying										
Drying Kilns	3.78	9.35	NA	NA	NA	NA	29.56	73.10	NA	NA
Planer Point Sources										
New Planer Cyclone, No.4	1.66	7.24	NA	NA	NA	NA	NA	NA	NA	NA
Finger-Jointer Point Sources										
Finger Jointer Cyclone, No.5	0.525	2.30	NA	NA	NA	NA	NA	NA	NA	NA
Finger Jointer Cyclone (pull-through), No.6	0.525	2.30	NA	NA	NA	NA	NA	NA	NA	NA
Natural Gas Fired Boiler										
Boiler No.1	0.22	0.96	2.87	12.58	2.41	10.57	0.16	0.69	0.02	0.08
Boiler No.2	0.11	0.48	1.44	6.29	1.21	5.28	0.08	0.35	0.01	0.04
Total Emissions From Point Sources		22.62		18.87		15.85		74.14		0.12

^a As determined by a pollutant-specific EPA reference method, DEQ-approved alternative, or as determined by DEQ's emissions estimation methods used in this permit analysis.

Table 5.2.2 FACILITY TAPS (IDAPA 58.01.01.585 AND 586) EMISSION INVENTORY BASED ON PTE ^a

Pollutants	Natural Gas-Fired Boiler No.1		Natural Gas-Fired Boiler No.2		Dry Kilns	
	lb/hr	T/yr	lb/hr	T/yr	lb/hr	T/yr
Benzene	6.03 E-05	2.64E-04	3.02 E-05	1.32E-04		
Benzo(a)pyrene	3.45 E-08	1.51E-07	1.72 E-08	7.55E-08		
Formaldehyde	2.15 E-03	9.44E-03	1.08 E-03	4.72E-03	0.08 ^b	0.34
Hexane	5.17 E-02	2.26E-01	2.59 E-02	1.13E-01		
Naphthalene	1.75 E-05	7.67E-05	8.76 E-06	3.84E-05		
Pentane	7.47 E-02	3.27E-01	3.73 E-02	1.64E-01		
Toluene	9.77 E-05	4.28E-04	4.88 E-05	2.14E-04		
Arsenic	5.75 E-06	2.52E-05	2.87 E-06	1.26E-05		
Barium	1.26 E-04	5.54E-04	6.32 E-05	2.77E-04		
Beryllium	3.45 E-07	1.51E-06	1.72 E-07	7.55E-07		
Cadmium	3.16 E-05	1.38E-04	1.58 E-05	6.92E-05		
Chromium	4.02 E-05	1.76E-04	2.01 E-05	8.81E-05		
Cobalt	2.41 E-06	1.06E-05	1.21 E-06	5.28E-06		
Copper	2.44 E-05	1.07E-04	1.22 E-05	5.35E-05		
Manganese	1.09 E-05	4.78E-05	5.46 E-06	2.39E-05		
Mercury	7.47 E-06	3.27E-05	3.73 E-06	1.64E-05		
Molybdenum	3.16 E-05	1.38E-04	1.58 E-05	6.92E-05		
Nickel	6.03 E-05	2.64E-04	3.02 E-05	1.32E-04		
Selenium	6.89 E-07	3.02E-06	3.45 E-07	1.51E-06		
Vanadium ⁴	1.18E-04	5.17E-04	5.90E-05	2.58E-04		
Zinc	8.33 E-04	3.65E-03	4.17 E-04	1.82E-03		
Methanol					2.06 ^c	5.1
Phenol					0.14 ^c	0.34

^a As determined by a pollutant-specific EPA reference method, a DEQ-approved alternative, or as determined by DEQ's emissions estimation methods used in this permit analysis.

^b Annual average.

^c 24-hr average

5.3 Modeling

Criteria pollutant

The facility has demonstrated compliance, to DEQ's satisfaction, that this project will not cause or significantly contribute to a violation of PM₁₀ ambient air quality standards. The summary of the modeling analysis is in Table 5.3.1 Detailed modeling analysis is included in Appendix A.

Table 5.3.1 FULL IMPACT ANALYSIS RESULTS

Pollutant	Averaging Period	Facility Ambient Impact (µg/m ³)	Background concentration (µg/m ³)	Total Ambient Concentration (µg/m ³)	NAAQS (µg/m ³)	Percent of NAAQS
PM ₁₀	24-hour	54.7	66	120.7	150	80
	Annual	10.27	21	31.27	50	62

Toxic air pollutant

Because formaldehyde emissions from the fifth dry kiln exceeded the corresponding screening emissions level in IDAPA 58.01.01.586 and the modeled concentration exceeds the corresponding acceptable ambient

concentrations in IDAPA 58.01.01.586, a T-RACT analysis was required and subsequently conducted by MBL's consultant. The analysis was submitted to DEQ December 17, 2004. DEQ reviewed the submittal and determined that the T-RACT analysis satisfied the requirement under IDAPA 58.01.01.210. Therefore, this modification complies with preconstruction toxic rules.

5.4 Regulatory Review

This section describes the regulatory analysis of the applicable air quality rules with respect to this permit.

IDAPA 58.01.01.201Permit to Construct Required

This facility is proposing to add a fifth dry kiln and increase the drying capacity of the facility by 40 MMbdf/yr. The proposed project does not qualify for an exemption under Sections 220 through 223 of the Rules; therefore, a PTC is required.

40 CFR 60 Subpart Dc.....New Source Performance Standards

The kiln is not subject to NSPS requirements.

40 CFR 61 and 63National Emission Standards for Hazardous Air Pollutants & MACT

The kiln is not subject to NESHAP or MACT requirements.

6. PERMIT REQUIREMENTS

This section only addresses new or modified permit conditions due to this permitting action.

Facility –Wide Condition

- 6.1** Permit Condition 2.2 was carried over from PTC No. P-040106, issued November 26, 2002. DEQ received the fugitive dust management plan from the permittee on January 15, 2003, thus fulfilling the requirement. The requirement remains in the permit for enforceability reasons.

Drying Kilns

- 6.2** Permit Condition 4.4 allows for a 40 MMbdf/yr increase in dried lumber from five dry kilns. The allowable dried lumber throughput is 170 MMbdf/yr.

Emissions Limits

The daily PM₁₀ emissions limit is modified to reflect the increase of the dry kilns' capacity. The daily PM₁₀ emissions limit is established based on the modeled emissions rate of 0.756 lb/hr from each dry kiln heat exchanger vent. The kilns have total of five vents, so the daily PM₁₀ emissions limit of 90.72 lb/day is calculated by multiplying the individual emissions rate (0.756 lb/hr) by 24 hr/day, and then by five. The facility-wide PM₁₀ modeled ambient concentration plus background concentration for PM₁₀, 24-hr average, is 80% of the NAAQS.

The annual emissions limit for VOC is revised to reflect the increase of the dry kilns' capacity and the using of a species-specified emission factor in the VOC emissions estimates. The annual PM and PM₁₀ emissions limits are removed from the permit because they are inherently limited by the annual VOC emissions limits. The annual PM₁₀ emissions from the dry kilns are 9.35 T/yr, which is well below the major threshold of 100 T/yr. The facility wide PM₁₀ modeled ambient concentration plus background concentration for PM₁₀, annual average, is 21% of the NAAQS.

6.4 Compliance Demonstration

Lorenzen Engineering, MBL's consultant, provided the following discussion in Section 2.1 of MBL's modeling protocol:

Lumber drying is a batch process. The maximum drying kilns (5) capacity is 825 mbdft. By assuming all PM₁₀ emissions from a single batch (five kilns) emit within a 24-hour period, the worst case hourly rate based on a 24-hour average is calculated as 825 mbdft x 0.11 lb/mbdft = 3.78 lb/hr. PM₁₀ modeling to demonstrate compliance with the 24-hour standard was performed using the emission rate of 3.78 lb/hr from all the kiln heat exchangers.

The kilns are in compliance with PM₁₀ 24-hour NAAQS at their maximum design capacity, therefore, there is no need for a specific daily throughput limit or monitoring requirements. In real life, the drying time for a single batch is longer than 24 hours. Therefore, the above assumption is conservative.

Monthly and annual throughput limits are modified to reflect the kiln modification. The monthly throughput is 24.75 mmbdft/month, which is calculated by multiplying the maximum daily throughput of 0.825 mmbdft/day by 30 days per month. Annual throughput is 170 mmbdft/yr, as requested in the application. The permittee is required to monitor and record, on a monthly and annual basis, the lumber throughput to the kilns to demonstrate compliance with monthly and annual throughput limits, and ultimately to demonstrate compliance with VOC annual emissions limit. The amounts shall be recorded as million board feet per year (mmbdft/yr) based on board scale. The annual amount shall be based on a rolling 12-month summation.

Cyclones and Planer Cyclone Baghouse

As requested in the application, the following emissions units are not included in the permit analysis and are removed from the permit because they are no longer connected to active process equipment.

- Cyclone No. 1 – Old planer cyclone with flow rate of 20,500 actual cubic feet per minute (acfm).
- Cyclone No. 2 – Rip saw relay cyclone with flow rate of 18,250 acfm.
- Cyclone No. 3 – Rip saw cyclone with flow rate of 20,500 acfm.
- Cyclone No. 7 – Remanufacturing chips cyclone with flow rate of 18,250 acfm.
- Chip bin target box with throughput of 1.31 bone-dry tons per hour. Per the application.

As a result, the emissions are redistributed to the other two cyclones.

6.5 Emissions Limits

Daily emissions limit for PM₁₀ is modified to reflect the modification.

Annual PM₁₀ and PM emissions limits are removed from the permit because they are inherently limit by the daily emissions limits. The facility wide PM₁₀ emissions are 22.6 T/yr which are well below major threshold of 100T/yr. The facility wide PM₁₀ modeled ambient concentration plus background concentration for PM₁₀, annual average is 21% of the NAAQS.

6.6 Compliance Demonstration

The limit of operating hours for the baghouse and its corresponding monitoring requirement are not necessary and are removed from the permit because the emissions from the baghouse are modeled at its maximum capacity.

The limit of operating hours for the finger jointer cyclones and their corresponding monitoring requirements are removed from the permit because the emissions from these cyclones are limited by the jointer's maximum capacity. MBL's consultant provided the information on December 17, 2004 through email.

Natural Gas-fired Boiler

6.7 Emissions Limits

Emissions limits for NO_x and CO are removed from the permit because they are inherently limited by the PM₁₀ and VOC emissions limits for the boilers. The facility wide NO_x and CO modeling concentrations plus background concentration are well below their NAAQS.

7. FEES

MBL paid the \$1,000 application fee, as required in IDAPA 58.01.01.224, and \$5,000 permit to construct processing fee, as required in accordance with IDAPA 58.01.01.225, on September 28, 2004. The increase in emissions from the modification was greater than 10 T/yr and less than 100 T/yr.

The MBL facility is not a major facility as defined in IDAPA 58.01.01.008.10. Therefore, in accordance with IDAPA 58.01.01.387, Title V registration fees are not applicable.

Table 5.1 PTC PROCESSING FEE TABLE

Pollutant	Annual Emissions Increase (T/yr)	Annual Emissions Reduction (T/yr)	Annual Emissions Change (T/yr)
NO _x	0.0	0	0.0
SO ₂	0.0	0	0.0
CO	0.0	0	0.0
PM ₁₀	1.7	0	0.0
VOC	12.9	0	0.0
TAPS/HAPS	1.4	0	0.0
Total:	16.0	0	16.0
Fee Due	\$5,000		

8. RECOMMENDATION

Based on review of application materials and all applicable state and federal rules and regulations, staff recommends that MBL be issued proposed Tier II Operating Permit and PTC No. P-040121 for the addition of the fifth dry kiln and throughput increase. An opportunity for public comment on the air quality aspects of the proposed operating permit shall be provided in accordance with IDAPA 58.01.01.404.01.c.

BR/SYC/sd

Permit No. P-040121

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APPENDIX A

Modeling Review

Tier II Operating Permit and Permit to Construct No. T2-040121

Merritt Brothers Lumber Co., Athol

Facility ID No. 055-00039

MODELING MEMORANDUM

DATE: December 17, 2004

TO: Shawnee Chen, Senior Engineer

THROUGH: Kevin Schilling, Stationary Source Modeling Coordinator 

FROM: Almer Casile, Permitting Analyst 

PROJECT NUMBER: T2-040121

SUBJECT: Modeling Review for the Merritt Brothers Lumber, Athol
Facility ID No. 055-00039

1.0 Summary



Atmospheric dispersion modeling of emissions was submitted in a Tier II/permit to construct application to demonstrate that the facility would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02). This modeling analysis included 10 sources and addressed the criteria pollutant PM₁₀ and TAP formaldehyde.

Table 1 presents the key assumptions used in the modeling analysis submitted by the applicant.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSIS SUBMITTED BY THE APPLICANT	
Assumption	Explanation
Cyclones emission rates represent operation for a 24 hour period.	Facility has proposed a 24 hr operating schedule.
Each kiln's 24 hr average emission rate equals 0.756 lb/hr . Total emissions from kilns equals 3.78 lb/hr.	Provides for worst case 24 hr emissions.
Each kiln's annual emission rate equals 9.3 ton/year (hourly emission of 2.13 lb/hr averaged over the year). Total emissions from kilns equals 9.3 ton/yr.	Facility cannot operate at worst case conditions for an entire year.
Facility will implement T-RACT for formaldehyde.	The modeled T-RACT ambient concentration at the point of compliance is less than the amount of formaldehyde that would contribute an ambient air cancer risk probability of less than one to one hundred thousand (1:100,000).

Based on the results of the analysis, DEQ has determined that the submitted modeling analysis demonstrates, to DEQ's satisfaction, that the facility will not cause or contribute to a violation of any ambient air quality standards of TAPs or PM₁₀.

MODELING MEMORANDUM

DATE: December 17, 2004
TO: Shawnee Chen, Senior Engineer
THROUGH: Kevin Schilling, Stationary Source Modeling Coordinator 
FROM: Almer Casile, Permitting Analyst 

PROJECT NUMBER: T2-040121

SUBJECT: Modeling Review for the Merritt Brothers Lumber, Athol
Facility ID No. 055-00039

1.0 Summary

Atmospheric dispersion modeling of emissions was submitted in a Tier II/permit to construct application to demonstrate that the facility would not cause or significantly contribute to a violation of any ambient air quality standard (IDAPA 58.01.01.203.02). This modeling analysis included 10 sources and addressed the criteria pollutant PM₁₀ and TAP formaldehyde.

Table 1 presents the key assumptions used in the modeling analysis submitted by the applicant.

Table 1. KEY ASSUMPTIONS USED IN MODELING ANALYSIS SUBMITTED BY THE APPLICANT	
Assumption	Explanation
Cyclones emission rates represent operation for a 24 hour period.	Facility has proposed a 24 hr operating schedule.
Each kiln's 24 hr average emission rate equals 0.756 lb/hr . Total emissions from kilns equals 3.78 lb/hr.	Provides for worst case 24 hr emissions.
Each kiln's annual emission rate equals 9.3 ton/year (hourly emission of 2.13 lb/hr averaged over the year). Total emissions from kilns equals 9.3 ton/yr.	Facility cannot operate at worst case conditions for an entire year.
Facility will implement T-RACT for formaldehyde.	The modeled T-RACT ambient concentration at the point of compliance is less than the amount of formaldehyde that would contribute an ambient air cancer risk probability of less than one to one hundred thousand (1:100,000).

Based on the results of the analysis, DEQ has determined that the submitted modeling analysis demonstrates, to DEQ's satisfaction, that the facility will not cause or contribute to a violation of any ambient air quality standards of TAPs or PM₁₀.

2.0 Background Information

2.1 Applicable Air Quality Impact Limits

This facility is located in Kootenai County which is designated as an attainment or unclassifiable area for sulfur dioxide (SO₂), nitrogen dioxide (NO₂), carbon monoxide (CO), lead (Pb), ozone (O₃), and particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers (PM₁₀). The application proposes changes in emissions that exceed modeling thresholds for PM₁₀, and the screening level for formaldehyde. The applicable regulatory limits for the application are presented in Table 2.

Table 2. APPLICABLE REGULATORY LIMITS				
Pollutant	Averaging Period	Significant Contribution Levels (µg/m ³) ^{a, b}	Regulatory Limit (µg/m ³) ^c	Modeled Value Used ^d
PM ₁₀ ^e	Annual	1	50 ^f	Maximum 1 st highest
	24-hour	5	150 ^g	Highest 2 nd highest
Formaldehyde	Annual	N/A	7.7E-02	Maximum 1 st highest

a. IDAPA 58.01.01.006.93

b. Micrograms per cubic meter

c. IDAPA 58.01.01.577 for criteria pollutants, IDAPA 58.01.01.585 for non-carcinogenic toxic air pollutants IDAPA 58.01.01.586 for carcinogenic toxic air pollutants.

d. The maximum 1st highest modeled value is always used for significant impact analysis and for all toxic air pollutants. Concentration at any modeled receptor.

e. Particulate matter with an aerodynamic diameter less than or equal to a nominal ten micrometers

f. Never expected to be exceeded in any calendar year.

g. Never expected to be exceeded more than once in any calendar year (used only when 1 year of meteorological data is available for modeling).

2.2 Background Concentrations

The appropriate background concentrations for this modeling analysis were provided by DEQ in its July 2004 review of the modeling protocol. The concentrations are presented in Table 3.

Table 3. BACKGROUND CONCENTRATIONS.		
Pollutant	Averaging Period	Background concentrations (µg/m ³) ^a
PM ₁₀	24-hour	66
	Annual	21

a. Micrograms per cubic meter.

3.0 Assessment of Submitted, Certified Modeling Analysis

This section documents the assessment of the application materials as submitted and certified by the applicant.

3.1 Modeling Methodology

Lorenzen Engineering, Inc., conducted the modeling analysis. Table 4 presents the modeling assumptions and parameters used by the applicant. Table 4 also includes DEQ's review and determination of those assumptions and parameters.

Table 4. MODELING PARAMETERS.		
Parameter	What Facility Submitted	DEQ's Review/Determination
Modeling protocol	A modeling protocol was submitted for prior approval	The original protocol was not followed. The facility updated the protocol after errors were found in it.
Model Selection	ISC-Prime	This is appropriate and correct version was used.
Meteorological Data	DEQ data from Meyer Ranch April 1, 2000 through March 31, 2001	Appropriate
Model Options	Regulatory defaults used	Appropriate
Land Use	Rural land use	Appropriate
Complex Terrain	Complex terrain is included in the model	Appropriate
Building Downwash	Downwash was included	Appropriate
Receptor Network	25 meters along ambient air boundary 100 meters out to 2000 meters 10 meters along predicted hot spots	This is sufficient to adequately address the maximum design concentration
Facility Layout	Plot Plan	The facility building layout used in the model was verified by using the scaled plot plan submitted by the applicant. Stack and the kiln exhausts locations were verified against updated information submitted by the facility.

3.2 Emission Rates

Table 5 provides the criteria pollutant and TAP's emission rates used in the submitted modeling files, respectively.

Table 5. EMISSION RATES FOR CRITERIA AND TOXIC POLLUTANTS		
Source	Emission Rates (lb/hr)	
	PM₁₀ (24/Annual)	Formaldehyde
Boiler 1	0.22	0.001
Boiler 2	0.11	0.001
Cyclone 4 w/Baghouse	1.66	N/A
Cyclone 5	0.525	N/A
Cyclone 6	0.525	N/A
Kiln Heat Exchanger 1	0.756/0.425	0.01552
Kiln Heat Exchanger 2	0.756/0.425	0.01552
Kiln Heat Exchanger 3	0.756/0.425	0.01552
Kiln Heat Exchanger 4	0.756/0.425	0.01552
Kiln Heat Exchanger 5	0.756/0.425	0.01552

3.3 Emission Release Parameters

The emission release parameters used in the modeling analysis submitted by the applicant are presented in Table 6.

Table 4. MODELING PARAMETERS.		
Parameter	What Facility Submitted	DEQ's Review/Determination
Modeling protocol	A modeling protocol was submitted for prior approval	The original protocol was not followed. The facility updated the protocol after errors were found in it.
Model Selection	ISC-Prime	This is appropriate and correct version was used.
Meteorological Data	DEQ data from Meyer Ranch April 1, 2000 through March 31, 2001	Appropriate
Model Options	Regulatory defaults used	Appropriate
Land Use	Rural land use	Appropriate
Complex Terrain	Complex terrain is included in the model	Appropriate
Building Downwash	Downwash was included	Appropriate
Receptor Network	25 meters along ambient air boundary 100 meters out to 2000 meters 10 meters along predicted hot spots	This is sufficient to adequately address the maximum design concentration
Facility Layout	Plot Plan	The facility building layout used in the model was verified by using the scaled plot plan submitted by the applicant. Stack and the kiln exhausts locations were verified against updated information submitted by the facility.

3.2 Emission Rates

Table 5 provides the criteria pollutant and TAP's emission rates used in the submitted modeling files, respectively.

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Kiln Heat Exchanger 4	0.756/0.425	0.01552
Kiln Heat Exchanger 5	0.756/0.425	0.01552

3.3 Emission Release Parameters

The emission release parameters used in the modeling analysis submitted by the applicant are presented in Table 6.

APPENDIX B

AIRS Information

Tier II Operating Permit and Permit to Construct No. T2-040121

Merritt Brothers Lumber Co., Athol

Facility ID No. 055-00039

Table A.1 AIRS/AFS ^a FACILITY-WIDE CLASSIFICATION^b DATA ENTRY FORM

AIR PROGRAM	SIP	PSD	NSPS (Part 60)	NESHAP (Part 61)	MACT (Part 63)	TITLE V	AREA CLASSIFICATION A – Attainment U – Unclassifiable N – Nonattainment
POLLUTANT							
SO ₂	B						U
NO _x	B					U	
CO	B					U	
PM ₁₀	B					U	
PT (Particulate)	B						
VOC	B					SM	U
THAP (Total HAPs)	B						
			APPLICABLE SUBPART				

^a Aerometric Information Retrieval System (AIRS) Facility Subsystem (AFS)

^b AIRS/AFS Classification Codes:

- A = Actual or potential emissions of a pollutant are above the applicable major source threshold. For NESHAP only, class “A” is applied to each pollutant which is below the 10 T/yr threshold, but which contributes to a plant total in excess of 25 T/yr of all NESHAP pollutants.
- SM = Potential emissions fall below applicable major source thresholds if and only if the source complies with federally enforceable regulations or limitations.
- B = Actual and potential emissions below all applicable major source thresholds.
- C = Class is unknown.
- ND = Major source thresholds are not defined (e.g., radionuclides).

APPENDIX C

Emissions Inventory

Tier II Operating Permit and Permit to Construct No. T2-040121

Merritt Brothers Lumber Co., Athol

Facility ID No. 055-00039